Abstract of the Disclosure

The present invention relates to the efficient realization of a time variant multi-rate FIR filter cascaded with a time invariant FIR filter. Preferably, the time invariant FIR filter response provides filtering based on channel estimates and the time variant FIR filter provides filtering to effectively implement spreading and scrambling with appropriate coding. The realization of the combined filters is accomplished by transforming the pair of filters into a single "combined" polyphase filter with coefficients that are time variant in a specific manner. The invention provides for pre-calculating the coefficients of the combined filter; a memory storage and addressing scheme for the resulting coefficients that ensures that the combined filter behaves like the original pair of filters; and overall polyphase decomposition of the resulting filter to significantly reduce the computational complexity as compared to the requirements of the original pair of filters.